

## CLAIMS

- 5 1. A power controller for use with lighting systems including a direct current voltage source, a coil of known inductance, a switch means adapted to control application of the source voltage to the coil, means adapted to select a required duty cycle for the switch such that the input power level is substantially constant, and means adapted to control operation of the switch such that this selected duty cycle is effected.
2. A power controller as in claim 1 including means to rectify an output of the coil.
- 10 3. A power controller as in claim 1 further including at least one diode and at least one capacitor, arranged to co-operate with the switch and the coil to form a switchmode DC-DC converter.
4. A power supply as in claim 3 wherein the switchmode power supply is a buck-boost converter.
- 15 5. A power supply as in claim 3 wherein the switchmode power supply is a buck converter.
6. A power supply as in claim 3 wherein the switchmode power supply is a boost converter.
- 20 7. A power controller as in claim 1 wherein the coil is a primary coil of a transformer, further including a secondary coil, the switch means being adapted to control application of the source voltage to the primary coil of said transformer.
- 25 8. A power controller as in claim 7 further including at least one diode and at least one capacitor, arranged to co-operate with the switch and the transformer to form a switchmode DC-DC converter

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9. A power supply as in claim 8 wherein the switchmode power supply is a flyback converter.

10. A power controller as in any one of the preceding claims coupled to an electric-to-light output transducer.

5 11. A power controller as in claim 10 wherein the transducer is an arc lamp.

12. A power controller as in claim 10 wherein the transducer is one or more light emitting diodes.

10 13. A power controller as in any one of the preceding claims wherein the means adapted to select the required duty cycle includes means to sense the magnitude of a voltage being provided by the voltage source.

15 14. A power controller as in any one of the preceding claims wherein the means adapted to select the duty cycle of the switch calculates this duty cycle according to a fixed mathematical relationship between said duty cycle and the voltage provided by the voltage source, the inductance of the coil and a desired power throughput of the device

15. A power controller as in any one of the preceding claims wherein the means adapted to determine the duty cycle of the switch includes a microprocessor.

20 16. A power controller as in claim 15 wherein the means to calculate the duty cycle of the switch includes stored instructions which the microprocessor is adapted to follow.

17. A power controller as in any one of claims 15 or 16 wherein the means to sense the magnitude of a voltage being provided by the voltage source is an input to the microprocessor.

25 18. A power controller as in any one of the preceding claims wherein the voltage source is a battery.

- 5 19. A method of effecting a supply of electrical power to an electrical-to-light output transducer where the input from a direct current supply is directed into a means which will effect transition into an output wherein said means further includes means to effect frequent switching wherein the mark-space ratio of the switching is able to be modified such that the input power is held effectively constant.
20. A power controller substantially as described in the specification with reference to and as illustrated by any one or more of the accompanying drawings.
- 10 21. A method of effecting a supply of electrical power substantially as described in the specification with reference to and as illustrated by any one or more of the accompanying drawings.